## CLAIMS

Claims 1-57 (cancelled).

58. (New) A DNA analysis system for analyzing a sample using an extraction solution and a master solution, said system comprising a housing, a receptacle, a plurality of reservoirs, a pipette, a control arrangement for controlling movement of the sample between the reservoirs, a heating element, a controller, a microcontroller, a gel filtration device, an electrophoresis device, a reader, and a computer.

59. (New) The system of Claim 58 wherein the receptacle is mounted on top of the housing, and contains the plurality of reservoirs.

60. (New) The system of Claim 58 wherein the reservoirs are designed to contain the sample, the extraction solution containing proteinase and 100 microliters of buffer solution for each microliter of proteinase, and the master solution containing a buffer, a Taq DNA polymerase, two oligonucleotide primers, deoxynucleoside triphosphate, and $M_gCl_2$.

61. (New) The system of Claim 58 wherein the reservoirs contain the sample, the extraction solution containing proteinase and 100 microliters of buffer solution for each microliter of proteinase, and the master solution containing a buffer, a Taq DNA polymerase, two oligonucleotide primers, deoxynucleoside triphosphate, and $M_gCl_2$.

62. (New) The system of Claim 58 wherein the control arrangement comprises a beam and an arm.

63. (New) The system of Claim 62 wherein the pipette is mounted to the arm which is suspended from the beam and displaceable horizontally along the beam.

64. (New) The system of Claim 58 comprising a holder for holding replacements tips of the pipette; said holder positioned adjacent to the heating element, and containing the reservoirs for various solutions.

65. (New) The system of Claim 58 wherein the gel filtration device contains:

a. a tube filled with gel filtration media incorporating a filtering resin, the media structured to allow larger fragments of DNA through the media, before any smaller fragments or unwanted substances can pass through the media;
b. a downstream end for collecting the larger fragments of DNA for DNA sequencing, wherein each larger DNA fragment differs in length from any other DNA fragment by a single nucleotide base at an end of the DNA fragment.

66. (New) The system of Claim 65 comprising a waste valve for discharging dNTPs and primers; and a valve for controlling passage of liquid through the tube.

67. (New) The system of Claim 58 wherein the electrophoresis device includes a capillary containing polyacrylamide or argose gel, a high voltage source, a detector for detecting information relating to tagged fluorescent nucleotides at an end of each DNA fragment, and a laser.

68. (New) The system of Claim 58 wherein the reader is capable of reading fluorescent ends of the fragments, said reader containing a charge coupled device (CCD) camera or photomultiplier tube (PMT) which outputs captured images into a monitoring means.

69. (New) The system of Claim 60 wherein the microcontroller contains instructions for executing a pre-programmed temperature profile thereby causing the heating element to:

a. heat the sample and extraction solution for 15 minutes at a temperature of about $75^0$C, thereby lysing the cells of the sample to facilitate DNA extraction; and
b. heat the extraction solution to about $95^0$C for 15 minutes to denature the proteinase.

70. (New) The system of Claim 60 wherein the microcontroller contains instructions for executing a pre-programmed temperature profile thereby causing the heating element to:

a. heat the sample and extraction solution at a temperature of about $75^0$C, thereby lysing the cells of the sample to facilitate DNA extraction; and
b. heat the extraction solution to about $95^0$C to denature the proteinase.

71. (New) The system of Claim 58 wherein the controller causes the pipette to mix the master solution with the sample and extraction solution to form a combined solution.

72. (New) The system of Claim 60 wherein the microcontroller contains instructions for:
a. heating a combined solution of the sample, extraction solution, and master solution to a temperature of about $95^0$C for 30 seconds to denature targeted DNA;
b. lowering the temperature of the combined solution to about $55^0$C for 30 seconds to permit the primers to anneal to a set of complimentary sequences; and
c. raising the temperature of the combined solution to about $72^0$C for 30 seconds to allow the Taq DNA polymerase to attach at each primed site and to form a new DNA strand.

73. (New) The system of Claim 60 wherein the microcontroller contains instructions for:
a. heating a combined solution of the sample, extraction solution, and master solution to a temperature of about $95^0$C to denature targeted DNA;
b. lowering the temperature of the combined solution to about $55^0$C to permit the primers to anneal to a set of complimentary sequences; and
c. raising the temperature of the combined solution to about $72^0$C to allow the Taq DNA polymerase to attach at each primed site and to form a new DNA strand.

74. (New) The system of Claim 72 wherein the microcontroller contains instructions for repeating steps a-c approximately 30 times to form an amplified solution.

75. (New) The system of Claim 58 wherein the controller contains instructions for:
a. feeding a combined solution of the sample, extraction solution, and master solution through the gel filtration media; and

b. tagging a nucleotide base at an end of a DNA fragment with a dideoxynucleoside base, by feeding a solution containing dye reactive to laser emissions to form a tagged solution.

76. (New) The system of Claim 75 wherein said microcontroller contains instructions for:
    a. heating the tagged solution to approximately 96°C for about 30 seconds;
    b. cooling the tagged solution to approximately $50^0$C for about 15 seconds; and
    c. heating the tagged solution to approximately $60^0$C for about 4 minutes.
77. (New) The system of Claim 76 wherein said microcontroller contains instructions for repeating steps a-c about 25 times.
78. (New) The system of Claim 77 wherein said controller further contains instructions for feeding the tagged solution into the electrophoresis equipment.
79. (New) The system of Claim 58 wherein said voltage source subjects a combination of the sample, extraction solution, and master solution to a high voltage field to cause the DNA fragments to migrate through the electrophoresis equipment.
80. (New) The system of Claim 67 wherein the detector contains instructions for causing the laser to emit laser light onto DNA fragments to cause the fragments to emit light.
81. (New) The system of Claim 80 wherein said the reader captures images of the light emitted from DNA fragments and outputs the images into the computer.
82. (New) The system of Claim 81 wherein the computer uses software to convert the images into an electropherogram, which is displayed onto a monitoring means.